Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently amended) A micromachined gyroscope adapted to operate in a nonresonant mode, comprising:

a drive-mode oscillator; and

a sense-mode oscillator,

wherein the drive-mode oscillator comprises a ~~first combination of at least two masses out of~~ three interconnected oscillating masses capable of moving in a drive direction, and the sense-mode oscillator comprises ~~a second combination of at least~~ two masses out of the three interconnected oscillating masses capable of moving in an orthogonal sense direction, and

~~wherein the drive-mode oscillator and the sense-mode oscillator are mechanically decoupled~~ where the oscillation in the drive direction of one of the masses of the drive-mode oscillator is mechanically constrained to the drive direction and where the relative oscillation of the masses of the sense-mode oscillator is mechanically constrained to the sense direction, so that the one mass of the drive-mode oscillator is dynamically decoupled from one mass of the sense-mode oscillator.

2. (Currently amended) The micromachined gyroscope of claim 1, wherein the drive-mode oscillator and sense-mode oscillator ~~by~~ are each characterized by a frequency response curve having a flat nonresonant region, where the drive mode

oscillator is capable of being operated within the flat nonresonant region of the drive frequency response curve, ~~means of their chosen design parameters dynamically amplify a movement of at least one of the three interconnected masses to achieve amplified~~ and where the sense mode oscillator is capable of being operated within the flat nonresonant region of the sense frequency response curve with a maximized operational oscillation amplitude~~s~~ at the frequency of operation ~~without resonance whereby increased bandwidth and reduced sensitivity to structural and thermal parameter fluctuations and damping changes results~~.

3. (Currently amended) The micromachined gyroscope of claim 1,

~~wherein the drive-mode oscillator comprises the three interconnected masses and oscillates in a drive direction, wherein the sense-mode oscillator comprises two of the three interconnected masses that oscillate in a sense direction,~~

wherein at least one of the three masses is included in an intermediate mass and another one of the three masses is a sensing element, wherein the intermediate mass is larger than the sensing element, and

wherein flexures in the drive-mode oscillator and sense-mode oscillator are physically configured so that only by Coriolis excitations without additional drive excitations are capable of being coupled into the sense-mode oscillator and ~~mechanically decoupled in the drive direction from the sense direction~~, so that a Coriolis force generated by means of the larger intermediate mass results in a corresponding larger Coriolis force being transferred to the sensing element for increased sensitivity.

4. (Currently amended) The micromachined gyroscope of claim 1,

wherein the drive-mode oscillator and sense-mode oscillator include a drive means for driving a mass in a drive direction and a sense means for sensing motion of a mass in a sense direction, and

wherein the three interconnected masses comprise a first mass, a second mass and a third mass, the first mass being the only mass directly excited by the drive means, the first mass oscillating in the drive direction and the first mass being constrained from movement in the sense direction, the second and third masses being constrained from movement with respect to each other in the drive direction and oscillating together in the drive direction but oscillating independently from each other in the sense direction, the third mass being fixed with respect to the second mass in the drive direction, but free to oscillate in the sense direction with respect to the second mass, the drive-mode oscillator comprising the three interconnected masses ~~that collectively act as a passive mass~~, the second and third masses comprising the sense-mode oscillator.

5. (Previously presented) The micromachined gyroscope of claim 4,

wherein the second mass oscillates in the drive and sense directions to generate a rotation-induced force that excites the sense-mode oscillator, and

wherein a sense direction response of the third mass, which acts as a vibration absorber of the sense-mode oscillator, is detected for measuring an input angular rate.

6. (Currently amended) The micromachined gyroscope of claim 1, further comprising a substrate on which the drive-mode oscillator and sense-mode oscillator are disposed,

wherein the three interconnected masses comprise a first mass, a second mass and a third mass, wherein the first mass is anchored to the substrate by a first flexure that allows movement substantially only in the drive direction, wherein the second mass is coupled to the first mass by a second flexure that allows movement in the drive and the sense directions, and wherein the third mass is coupled to the second mass by a third flexure that allows movement relative to the second mass substantially only in the sense direction, and

wherein the drive-mode oscillator and the sense-mode oscillator comprise a drive means for driving the first mass, the second mass and the third mass in a drive direction, a sense means for sensing motion of the third mass in a sense direction~~, and the substrate on which the drive-mode oscillator and sense-mode oscillator are disposed~~.

7. (Previously presented) The micromachined gyroscope of claim 6, wherein the first and third flexures are folded micromachined springs having a resiliency substantially in only a first direction and wherein the second flexure is comprised of two coupled folded micromachined springs, one of the two coupled folded micromachined springs having a resiliency substantially in only one of the first and a second direction orthogonal to the first direction and the other one of the two coupled folded

micromachined springs having a resiliency substantially in only the other one of the first and second directions.

8. (Currently amended) The micromachined gyroscope of claim 1, wherein the drive-mode oscillator and the sense-mode oscillator are structurally arranged and configured such that the drive-mode oscillator and sense-mode oscillator together collectively comprise a gyroscope each having a frequency response curve with two resonant peaks and a flat region between the two peaks, the flat regions of the drive-mode and sense-mode oscillator overlapping each other, the gyroscope capable of being operated at a frequency in the overlapping flat regions of the frequency response~~s~~ curves ~~of the drive and the sense-mode oscillators~~.

9. (Previously presented) The micromachined gyroscope of claim 8,

wherein the drive-mode oscillator has a drive direction anti-resonance frequency, wherein the sense-mode oscillator has a sense direction anti-resonance frequency, and

wherein the drive-mode oscillator and the sense mode oscillator are arranged and configured to have matching anti-resonance frequencies.

10. (Currently amended) The micromachined gyroscope of claim 1,

wherein the three interconnected masses comprise a first mass, a second mass, a third mass, and coupled flexures,

wherein the first mass oscillates, the second and the third masses combining to comprise a vibration absorber of the drive-mode oscillator, which vibration absorber

mechanically absorbs ~~and amplifies~~ the oscillations of the first mass to result in larger oscillations of the second and third masses than the first mass, and

wherein the drive-mode oscillator and the sense-mode oscillator further comprise a drive means for driving the first mass, the second mass and the third mass in a drive direction, and a sense means for sensing motion of the third mass in a sense direction.

11. (Currently amended) The micromachined gyroscope of claim 10, wherein the first mass is driven at a driving frequency, ω_{drive}, by means of an input force $F_{d,}$ which driving frequency, ω_{drive}, is matched with a resonant frequency of an isolated ~~passive~~ mass-spring system comprised of the second and third masses and coupled flexures, which ~~passive~~ mass-spring system is in resonance with the first mass, so that maximum dynamic ~~amplification of a~~ motion of at least one of the three interconnected masses is achieved.

12. (Currently amended) The micromachined gyroscope of claim 1,

~~wherein the three interconnected masses comprise a first mass, a second mass, a third mass, and coupled flexures,~~

wherein the third mass absorbs vibrations such that the sense-mode oscillator achieves increased ~~amplified~~ sense direction oscillation amplitudes ~~due to mechanical amplification~~, and

wherein the drive-mode oscillator and the sense-mode oscillator further comprise a drive means for driving the first mass, the second mass and the third mass in a drive

direction, and a sense means for sensing motion of the third mass in a sense direction; and

wherein the third mass absorbs sense direction oscillations and is capable of achieving greater sense direction oscillation amplitudes due to application of a larger Coriolis force coupled to the third mass from the second mass than would have been applied to the third mass without coupling to the second mass in the sense direction.

13. (Currently amended) The micromachined gyroscope of claim 12,

wherein the third mass comprises an isolated ~~passive~~ mass-spring system, and wherein a ~~sinusoidal~~ Coriolis force is induced on the second mass, and

wherein the frequency of the ~~sinusoidal~~ Coriolis force is matched with a resonant frequency of the isolated ~~passive~~ mass-spring system of the third mass and its coupled flexures, so that the third mass achieves maximum ~~dynamic amplification in its~~ motion.

14. (Currently amended) The micromachined gyroscope of claim 1:

wherein the drive-mode oscillator comprises a drive means for driving the three interconnected masses in a drive direction, and the sense-mode oscillator comprises a sense means for sensing motion of one of the three interconnected masses in a sense direction,

wherein the three interconnected masses comprise a first mass, a second mass, a third mass, and flexures coupled to each of the first, second and third masses, wherein the drive-mode oscillator and the sense-mode oscillator each have a frequency response defined by a response curve,

wherein each of the frequency responses of both the drive-mode oscillator and sense-mode oscillator has two resonant peaks and a flat region of the response curve between the peaks,

wherein both of the drive-mode oscillator and the sense-mode oscillator are operated in the flat region of their respective response curves between the peaks of the respective response curve,

wherein the second mass has a drive anti-resonance frequency, $\omega_{2x,}$ and the third mass has a sense anti-resonance frequency, $\omega_{3y,}$ and

wherein ω_{2x}, and ω_{3y} are matched, namely where $\omega_{3y} = \omega_{2x}$, or equivalently $(k_{3y}/m_3)^{1/2} = (k_{2x}/(m_2 + m_3))^{1/2}$ determines ~~optimal~~ maximized operational system parameters, together with the ~~optimal~~ maximized operational ratios $\mu_x = (m_2 + m_3)/m_1$, $\gamma_x = \omega_{2x}/\omega_{1x}$, $\mu_y = m_3/m_2$, and $\gamma_y = \omega_{3y} / \omega_{2y,}$ where k_{3y} is a spring constant of the flexures coupled to the third mass, where m_3 is a magnitude of the third mass, k_{2x} is a spring constant of the flexures coupled to the second mass, m_2 is a magnitude of the second mass, ω_{1x} is the drive anti-resonance frequency of the first mass, and ω_{2y} is the sense anti-resonance frequency of the second mass.

15. (Currently amended) A method of nonresonantly operating a micromachined gyroscope formed in a substrate comprising:

oscillating ~~driving,~~ in a drive direction ~~first motion,~~ a drive-mode oscillator with an applied force;

oscillating ~~driving,~~ in a sense direction ~~second motion,~~ a sense-mode oscillator with a Coriolis force derived from the drive-mode oscillator; and

~~decoupling the first motion from the second motion,~~

wherein oscillating ~~driving~~ the drive-mode oscillator comprises oscillating relative to the substrate ~~driving a first combination of at least two masses out of~~ the three interconnected masses in the drive direction, and

wherein oscillating ~~driving~~ the sense-mode oscillator comprises oscillating relative to the substrate ~~driving a second combination of at least~~ two masses out of the three interconnected masses in the sense direction as sense masses,

where oscillating the three interconnected masses of the drive-mode oscillator further comprises mechanically constraining oscillation relative to the substrate of one of the three interconnected masses to the drive direction and

where oscillating the two masses out of the three interconnected masses comprises mechanically constraining relative motion of the two masses with respect to each other to the sense direction, so that oscillation in the drive direction with respect to the substrate of the one constrained mass of the drive-mode oscillator is dynamically decoupled from relative oscillation in the sense direction of the two masses.

16. (Currently amended) The method of claim 15, wherein driving the drive-mode oscillator and driving the sense-mode oscillator are capable of dynamically increasing ~~amplify~~ a motion of at least one of the three interconnected masses to achieve ~~amplified~~ increased oscillation amplitudes without resonance to result in an increased ~~bandwidth~~ operational frequency range and reduced sensitivity to structural and thermal parameter fluctuations and damping changes.

17. (Currently amended) The method of claim 15 wherein oscillating in a sense direction a sense-mode oscillator with a Coriolis force derived from the drive-mode oscillator comprises ~~mechanically decoupling the drive mode oscillator first motion and the second motion sense mode oscillators comprises:~~

~~mechanically decoupling the drive-mode oscillator and sense-mode oscillators in the drive direction from the sense direction; and~~

exciting a sense mass in the sense-mode oscillator by a force which is arises arising from ~~an intermediate~~ one of the three interconnected masses employed in both the drive-mode and sense mode oscillators,

wherein the ~~intermediate~~ mass employed in both the drive-mode and sense-mode oscillators is a substantially larger mass than the other of the two interconnected masses used as a sense mass, resulting in increased sensitivity of the gyroscope.

18. (Currently amended) The method of claim 15, wherein driving the drive-mode oscillator comprises driving a first, second and third masses in a drive direction with a drive means, and driving the sense-mode oscillator comprises driving second and third a mass in a sense direction~~,~~ by exciting the first mass only by ~~a~~ the drive means, by causing the first mass to oscillate in the drive direction with a driving force and by constraining movement of the first mass from the sense direction, by constraining movement of the second and third masses with respect to each other from the drive direction, causing the second and third masses to oscillate together in the drive direction but causing the second and third masses to oscillate independently from each other in the sense direction, by fixing the third mass ~~being fixed~~ with respect to the

second mass in the drive direction, and by causing the third mass to oscillate in the sense direction by means of a Coriolis force only.

19. (Currently amended) The method of claim 18, wherein ~~the oscillation of the~~ causing the second mass to oscillate in the drive and sense directions excites the sense-mode oscillator through the Coriolis ~~a rotation-induced~~ force, ~~which is used for~~ and further comprising detecting a sense direction response of the third mass, which acts as a vibration absorber of the sense-mode oscillator for measuring an input angular rate.

20. (Previously presented) The method of claim 15, wherein the three interconnected masses comprise a first mass, a second mass and a third mass, and wherein the drive-mode oscillator comprises a drive means for driving a mass in a drive direction and the sense-mode oscillator comprises a sense means for sensing motion of the third mass in a sense direction, and a substrate on which the drive-mode oscillator and the sense-mode oscillator are disposed, the method further comprising anchoring the first mass to the substrate by a first flexure and moving the first mass substantially only in the drive direction, moving the second mass coupled to the first mass by means of transferring force through a second flexure in the drive and the sense directions, and moving the third mass coupled to the second mass by means of transferring force through a third flexure substantially only in the sense direction.

21. (Currently amended) The method of claim 20,

wherein ~~anchoring~~ coupling the first mass to the substrate ~~comprises coupling the first mass~~ by the first flexure ~~to the substrate by~~ comprises coupling the first mass using a folded micromachined spring having a resiliency substantially in only the drive ~~one~~ direction, and

wherein moving the third mass ~~comprises coupling the third mass to the second mass by coupling the third mass using~~ by means of the ~~second~~ third flexure~~, which is comprised of~~ uses two coupled folded micromachined springs, one of the two coupled folded micromachined springs having a resiliency substantially in only the drive direction ~~one of the first or and a second direction orthogonal to the first direction~~, and the other one of the two coupled folded micromachined springs having a resiliency substantially in only the sense direction ~~other one of the first or and second directions~~.

22. (Currently amended) The method of claim 15, wherein driving the drive-mode oscillator and driving sense-mode oscillator being structurally arranged and configured to have the flat regions of their respective frequency response curves at least partially overlapping to define a common flat region, ~~comprises operating~~ the gyroscope being capable of operating in the common flat regions of response curves of the drive-mode and sense-mode oscillators between two resonant peaks in the response curves.

23. (Previously presented) The method of claim 22, further comprising matching an anti-resonance drive frequency of the drive-mode oscillator with an anti-resonance sense frequency of the sense-mode oscillator.

24. (Currently amended) The method of claim 15, wherein the three interconnected masses comprise a first mass, a second mass, a third mass, and coupled flexures, the second and the third masses combining to comprise a vibration absorber of the drive-mode oscillator, the method further comprising

mechanically absorbing ~~and amplifying~~ the oscillations of the first mass by means of the vibration absorber and

generating oscillations of at least a portion of the vibration absorber at a greater oscillation amplitude,

wherein the drive-mode oscillator and the sense-mode oscillator comprise a drive means for driving the first mass, the second mass, and the third mass in a drive direction, and a sense means for sensing a motion of the third mass in a sense direction.

25. (Currently amended) The method of claim 24, further comprising driving the first mass at a driving frequency, ω_{drive}, by means of an input force F_d, matching the driving frequency, ω_{drive}, with a resonant frequency of an isolated ~~passive~~ mass-spring system comprised of the second and third masses and coupled flexures, and moving the isolated ~~passive~~ mass-spring system in resonance with the first mass, so that a maximized ~~maximum~~ dynamic response of the second motion to the first motion ~~amplification of at least one of the first motion and the second motion~~ is achieved.

26. (Currently amended) The method of claim 15,

wherein driving the drive-mode oscillator comprises driving three interconnected masses in a drive direction and driving the sense-mode oscillator comprises ~~sensing~~ driving motion of one of the three interconnected masses ~~a~~ in a sense direction, and

wherein driving the drive-mode oscillator comprises driving three interconnected masses in a drive direction and driving the sense-mode oscillator comprises mechanically increasing ~~amplifying~~ sense direction oscillation amplitudes in a vibration absorber in the sense-mode oscillator.

27. (Currently amended) The method of claim 26, wherein the three interconnected masses comprise a first mass, a second mass, and a third mass, the method further comprising:

applying a ~~sinusoidal~~ Coriolis force to the second mass, and

matching the frequency of the ~~sinusoidal~~ Coriolis force with a resonant frequency of an isolated ~~passive~~ mass-spring system comprised of the third mass and its coupled flexures, so that the third mass achieves ~~maximum~~ a maximized dynamic increase ~~amplification~~ in its oscillation amplitudes.

28. (Currently amended) The method of claim 15,

wherein driving the drive-mode oscillator comprises driving a first, second and third mass in a drive direction, and driving the sense-mode oscillator comprises driving the second mass in a sense direction, and sensing motion of the third mass in the sense direction,

wherein the drive-mode oscillator and sense-mode oscillator each have a frequency response defined by a response curve,

wherein the frequency response of both the drive-mode oscillator and sense-mode oscillator have two resonant peaks and a flat region of the response curve between the peaks, operating both the drive-mode oscillator and sense-mode oscillator in the flat region of their response curves,

wherein the second mass has a drive anti-resonance frequency, $\omega_{2x,}$ and the third mass has a sense anti-resonance frequency, $\omega_{3y,}$ and

matching ω_{2x} and ω_{3y}, namely setting $\omega_{3y} = \omega_{2x}$, or equivalently $(k_{3y}/m_3)^{1/2} = (k_{2x}/(m_2 + m_3))^{1/2}$ and

determining therefrom maximized ~~optimal~~ system parameters, together with the optimized ratios $\mu_x = (m_2 + m_3)/m_1$, $\gamma_x = \omega_{2x}/\omega_{1x}$, $\mu_y = m_3/m_2$, and $\gamma_y = \omega_{3y} / \omega_{2y,}$ wherein k_{3y} is a spring constant of the flexures coupled to the third mass, m_3 is a magnitude of the third mass, k_{2x} is a spring constant of the flexures coupled to the second mass, m_2 is a magnitude of the second mass, ω_{1x} is a drive anti-resonance frequency of the first mass, and ω_{2y} is a sense anti-resonance frequency of the second mass.